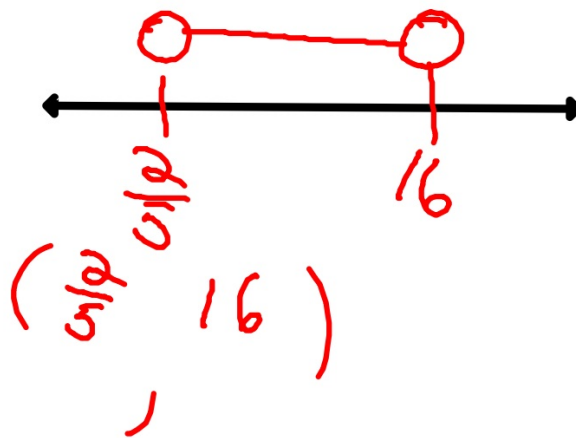


Bellwork: 9/27/12

~~$\frac{3}{8}$~~ $-\frac{3}{8}x > -6$ ~~$(-\frac{8}{3})$~~ or $\frac{5x > 2}{5 \quad 5}$
 $x < 16$ $x > \frac{2}{5}$



Sections 2.3 + 2.4 : Linear Functions

Find the slope of the line that passes through the given points...

slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

a) $(-3, 7)$ and $(-2, 4)$

$$\frac{4 - 7}{-2 - -3} = \frac{-3}{1} = -3$$

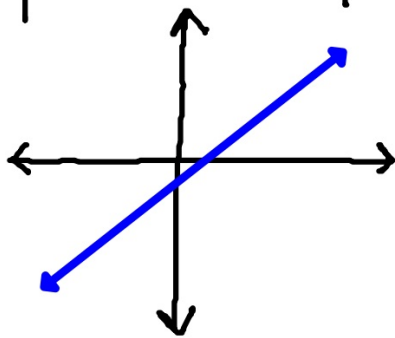
b) $(7, -3)$ and $(7, 1)$

$$\frac{1 - -3}{7 - 7} = \frac{4}{0}$$

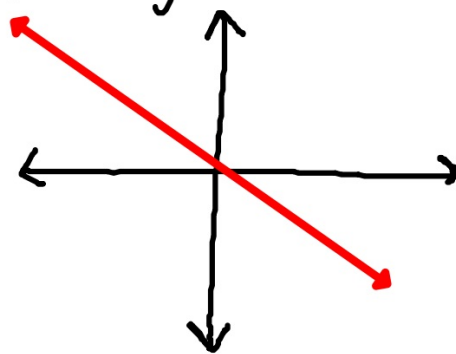
undefined

Draw a picture of a line with...

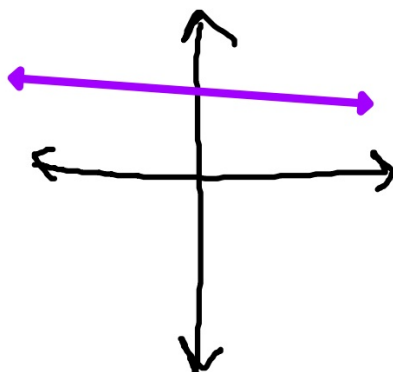
(a) positive slope



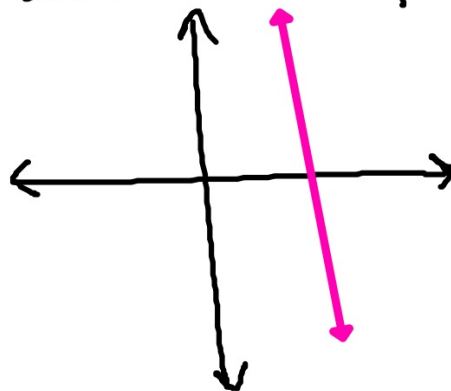
(b) negative slope



(c) zero slope



(d) undefined slope



Slope Intercept Form: $y = mx + b$

* Write the equation in slope intercept form:

$$\textcircled{a} \quad \begin{array}{r} 5x - 4y = 16 \\ -5x \quad -5x \\ \hline -4y = -5x + 16 \\ -4 \quad -4 \quad -4 \\ \hline y = \frac{5}{4}x - 4 \end{array}$$

$$\begin{array}{l} \text{slope} = \frac{5}{4} \\ y \text{ int} = -4 \end{array}$$

$$\textcircled{b} \quad \begin{array}{r} 3x + 2y = 18 \\ -3x \quad -3x \\ \hline 2y = -3x + 18 \\ 2 \quad 2 \quad 2 \\ \hline y = -\frac{3}{2}x + 9 \end{array}$$

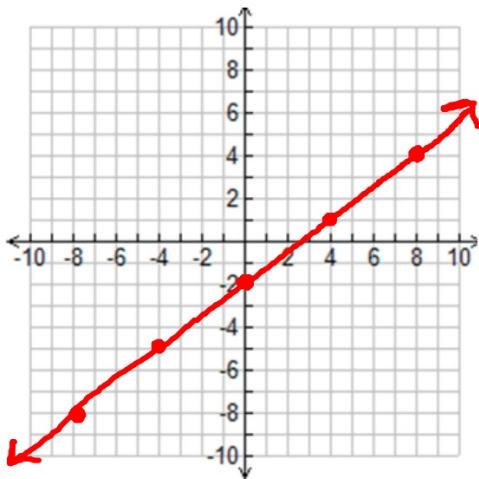
$$\begin{array}{l} \text{slope} = -\frac{3}{2} \\ y \text{ int} = 9 \end{array}$$

Graph each line: y must be by itself
($y = mx + b$)

① $y = \frac{3}{4}x - 2$

$m = \frac{3}{4}$

$b = -2$

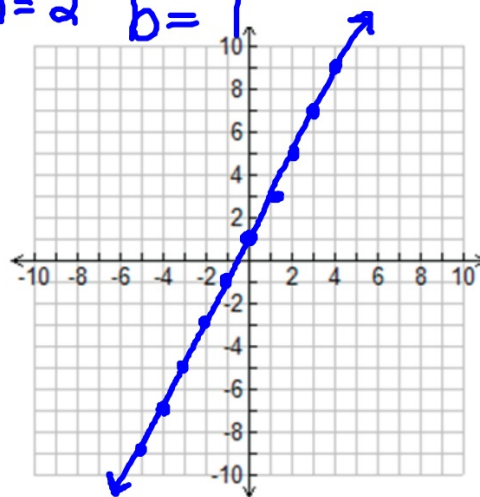


② $\cancel{-2x} + y = 1$

$y = 2x + 1$

$m = 2$

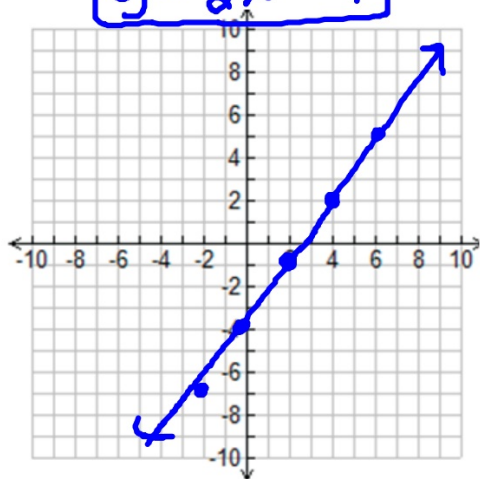
$b = 1$



$$\textcircled{c} \quad \cancel{3x} - 2y = 8$$

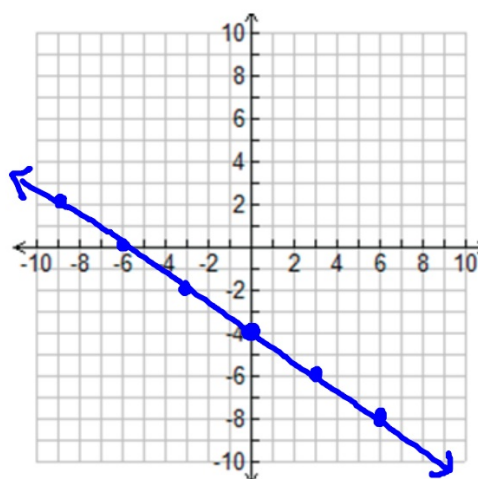
$$\cancel{-2y} = \frac{-\cancel{3x} + 8}{-2}$$

$$\boxed{y = \frac{3}{2}x - 4}$$



$$\textcircled{d} \quad \cancel{4x} + 6y = -24$$

$$\boxed{y = -\frac{2}{3}x - 4}$$



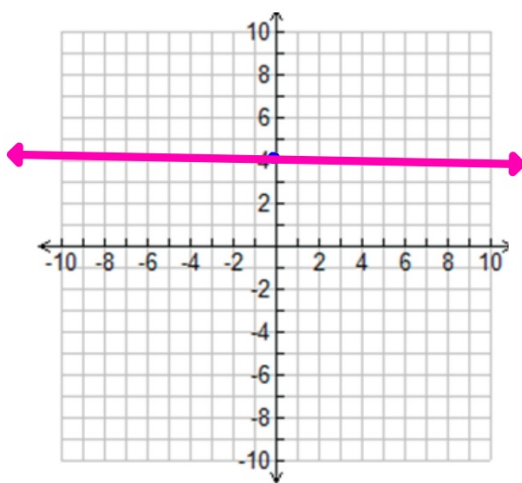
Horizontal vs. Vertical:

Horizontal line: has a slope = 0

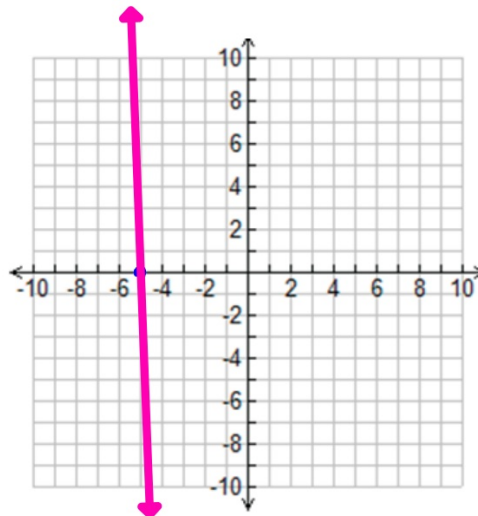
Vertical line: slope = undefined

Graph each line:

⑤ $y = 4$

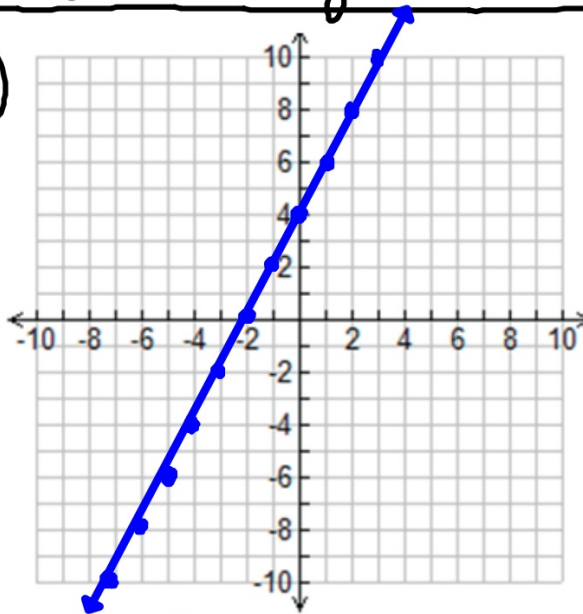


⑥ $x = -5$



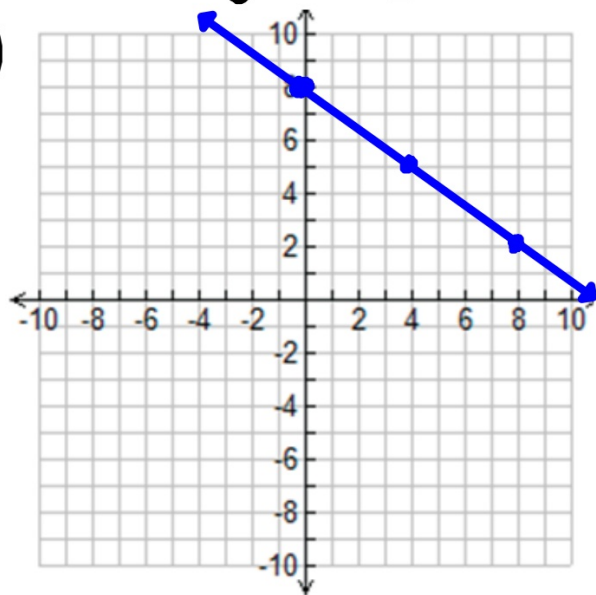
Find the equation of each line graphed:

①



$$m=2 \quad y=2x+4$$
$$b=4$$

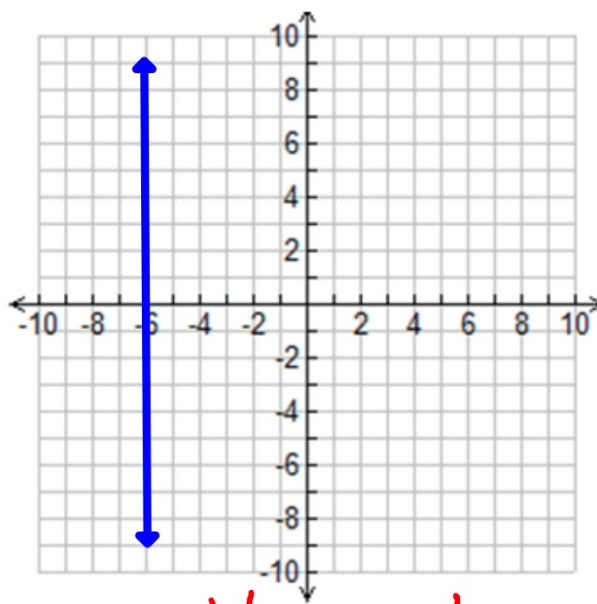
②



$$y=-\frac{3}{4}x+8$$
$$b=8$$

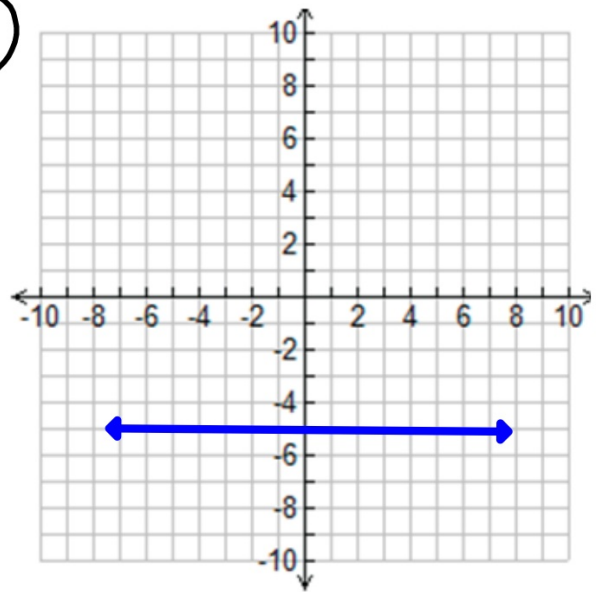
$$m=-\frac{3}{4}$$

③



$$x = -6$$

④



$$y = -5$$

Writing Equations of lines:

Point - slope form: $y - y_1 = m(x - x_1)$

@ $m = \frac{1}{5}$ pt = $(\overset{x_1}{5}, \overset{y_1}{-3})$

$$y - -3 = \frac{1}{5}(x - 5)$$

$$y + 3 = \frac{1}{5}x - 1$$

$-3 \qquad -3$

$y = \frac{1}{5}x - 4$

$$\textcircled{b} \ m = \frac{3}{4} \quad \text{pt}(-8, 5)$$

$$y - 5 = \frac{3}{4}(x + 8)$$

$$\begin{array}{rcl} y - 5 & = & \frac{3}{4}x + 6 \\ +5 & & +5 \end{array}$$

$$\textcircled{y = \frac{3}{4}x + 11}$$

$$y - y_1 = m(x - x_1)$$

$$\frac{3}{4} \cdot \frac{8}{1} = 6$$

* Write the equation of a line given 2 points:

@ $(\overset{x_1}{3}, \overset{y_1}{2})$ and $(\overset{x_2}{5}, \overset{y_2}{8})$

$$m = \frac{8-2}{5-3} = \frac{6}{2} = \textcircled{3}$$

$$m=3$$
$$(3,2)$$

$$y-2=3(x-3)$$
$$y-2=3x-9$$
$$\begin{array}{r} +2 \qquad +2 \\ \hline y=3x-7 \end{array}$$

$$m=3$$

$$(5,8) \quad y-8=3(x-5)$$

$$y-8=3x-15$$
$$\begin{array}{r} +8 \qquad +8 \\ \hline y=3x-7 \end{array}$$

Homework: 9/27/12

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#11 - #21 odd

